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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,398	10/17/2003	Andrei Colibaba-Evulct	131553-1	2881

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER
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LAIOS, MARIA J

ART UNIT	PAPER NUMBER
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1753

MAIL DATE	DELIVERY MODE
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07/13/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/689,398	Applicant(s) COLIBABA-EVULET, ANDREI	
	Examiner Maria J. Laios	Art Unit 1753	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-84 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-84 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. It does not appear to the present examiner that all of the pending claims were included in the previous requirement for restriction. Therefore, upon further consideration, the restriction requirement of January 11<sup>th</sup> 2007 is withdrawn and the following restriction requirement is set forth.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-29, 53, and 64, drawn to an appliance with a hydrogen storage container, classified in class 137, subclass 560.
- II. Claims 30-52, drawn to a hydrogen storage container, classified in class 206, subclass .6.
- III. Claims 54-63, 65-76, 81-84, drawn to a method of making carbon nanostructures and metal nanoparticles, classified in class 423, subclass 447.3.
- IV. Claims 77-80, drawn to an apparatus for synthesizing carbon nanostructures and metal nanoparticles, classified in class 422, subclass 129.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Groups I, II, and III are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the

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instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination of claims 1-29 does not require the particulars of the subcombination. The subcombination has separate utility such as a hydrogen storage tank for hydrogen used in laboratory experiments. Furthermore, the carbon nanostructures can be used for other purposes besides hydrogen storage. The carbon nanostructures can be used to make strong textile.

The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Inventions of Group I and Group IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are an appliance and an apparatus that makes carbon nanostructures and these two inventions cannot be used together and have different designs, modes of operation and effects.

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Inventions of Groups III and IV are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed to used to make other chemical compounds such as polymeric fibers instead of carbon nanostructures.

### **Election of Species**

If applicant elects Group I, a further election of species is required for the converter. This application contains claims directed to the following 8 patentably species for the converter:

A1 – Propulsion – Internal combustion engine

A2 – Propulsion – Turbine

A3 – Propulsion – Chemical Based

A4 – Power Generating System – Combustion based

A5 – Power Generating System – Fuel cell based

A6 – Thermal Management System – Heating System – Combustion

A7 – Thermal Management System – Heating System – Electrochemical

A8 – Thermal Management System – Cooling System

Inventions A1-A3 are directed to related to propulsion systems. Inventions A4-A5 are directed to related to power generating system. Inventions A6-A8 are directed to related to thermal management systems. The related inventions are distinct if the (1) the inventions as

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claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have materially different design such as chemical based/fuel cells and combustion based systems. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

If applicant elects Group II, a further election of species is required for the carbon-based material. This application contains claims directed to the following 8 patentably distinct species for the carbon-based material :

B1 – Multi-walled carbon nanotube – Zigzag structure

B2 – Multi-walled carbon nanotube – Chiral structure

B3 – Multi-walled carbon nanotube – Armchair structure

B4 – Single walled carbon nanotube – Zigzag structure

B5 – Single walled carbon nanotube – Chiral structure

B6 – Single walled carbon nanotube – Armchair structure

B7 – Platelets Structure

B8 – Graphite encapsulated metal nanoparticles

Inventions B1-B8 is directed to related the structure of a carbon based material. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use

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together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have a different design. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

If applicant elects Group III, a further election of species is required for the two distinct method of making:

Election of species for the method of treating the precursor in the first stage:

M1- method of making including in the first stage heating in an oxidizing flame, a precursor to form a metallic intermediate of nascent metal nanoparticles (readable on claims 54-63, and 65-76).

M2-method of making including in the first stage heating in a carbon monoxide/oxygen flame a precursor therein forming a metallic intermediate of nascent metal nanoparticles (readable on claims 81-84).

If applicant elects the method of M1, then a further election of species is to be made for the following:

Election of species for the precursor:

The two species are organometallic material and inorganometallic material

Election of species for the metallic intermediate:

The species are an oxide of an alkaline earth metal, an oxide of a transition metal, an oxide of a combination of metals, and a multifunctional catalyst.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims appear to be generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the



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inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria J. Laios whose telephone number is 571-272-9808. The examiner can normally be reached on Monday - Thursday 9:30 - 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJL *mjt*

*Amy Lay Inter*  
Supervising Patent Examiner